

REMARKS

Claims 1 -25 are pending in the present application.

Claims 1, 6, 18 and 22 have been objected to.

Claims 1-25 have been rejected.

Claims 1, 6 and 14 have been amended herein.

Reconsideration of the claims is respectfully requested.

In Section 2 of the July 2, 2004, Office Action, the Examiner objected to Claims 1, 6, 18 and 22, stating that the Applicant must choose the claimed element between a “channel encoder” and an “apparatus,” and asserting a superfluous use of the phrase “for use in.” In response to the Examiner’s objection, the Applicant has amended the preamble of Claims 1 and 6 to recite: “For use in a digital data communications system, an apparatus for use as a channel encoder comprising...”

With regard to Claims 18 and 22, the Applicant notes that the claims are method claims and do not recite an “apparatus.” In the preamble of Claims 18 and 22, the phrase “For use in a digital data communications system comprising a channel encoder,...” provides a context for the claimed invention; the phrase “...a method of operating said channel encoder,...” identifies the statutory class of the claimed invention; and the phrase “...said method comprising the steps of:” introduces the recitation of the elements of the claimed inventive method. The Applicant respectfully submits that there is, in fact, no superfluous language in the preambles of Claims 18 and 22.

For these reasons, the Applicant respectfully requests the withdrawal of the objection to Claims 1, 6, 18 and 22.

In Section 3 of the July 2, 2004, Office Action, the Examiner rejected Claims 6 and 14 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements. The Applicant has amended Claims 6 and 14 to address the typographical errors identified by the Examiner and respectfully submits that the amended claims now recite all the essential structural cooperative relationships between the elements of the claims. The Applicant respectfully requests the withdrawal of the §112 rejection of Claims 6 and 14 and the full allowance of Claims 6 and 14.

In Section 4 of the July 2, 2004, Office Action, the Examiner rejected Claims 1-5, 10-13 and 18-21 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,907,582 to *Yi* (hereinafter, simply "*Yi*"). The Applicant respectfully traverses this rejection.

The Applicant directs the Examiner's attention to Claim 1, which contains the unique and non-obvious limitations emphasized below:

1. (Currently Amended) For use in a digital data communications system comprising a channel encoder, an apparatus comprising:
 - a first Turbo encoder capable of Turbo encoding data;
 - an interleaver unit coupled to said first Turbo encoder, said interleaver unit capable of interleaving Turbo encoded data from said first Turbo encoder; and
 - a second Turbo encoder coupled to said interleaver unit, said second Turbo encoder capable of Turbo encoding interleaved data from said interleaver unit.*(emphasis added)*

The Applicant respectfully asserts that the above-emphasized limitations are not disclosed, suggested, or even hinted at in the *Yi* reference.

The Office Action relies upon Claim 16, sections A1-A3, of the *Yi* reference in the rejection of Claims 1-5, 10-13 and 18-21. The cited elements of the claim state:

16. A digital communication system, comprising:
(A) a broadcast data source comprising:
 (1) a first turbo encoder for turbo encoding digital source information into a first code sequence,
 (2) an interleaver for interleaving the digital source information,
 (3) a second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence,... (*emphasis added*)

As correctly summarized in the Office Action, the *Yi* reference discloses a digital communication system comprising a first turbo encoder for turbo encoding digital source information and an interleaver for interleaving the digital source information. This is illustrated in FIGURE 3 of the *Yi* reference. The digital source information from audio encoder 120 data is input in parallel to the interleaver 132 and the first turbo encoder 134. Thus, the output of the first turbo encoder 134 in the *Yi* reference is not applied as an input to the interleaver 132.

However, whereas the *Yi* reference recites interleaving the same digital source information as the first turbo encoder, Claim 1 of the present application recites interleaving turbo encoded data from the first turbo encoder. In short, the circuit configuration in Claim 16 and FIGURE 3 of the *Yi* reference are not the same as the apparatus recited in Claim 1. For at least this reason, therefore, independent Claim 1 contains patentable subject matter over the *Yi* reference. Also, dependent Claims 2-5 depend from Claim 1 and contain all of the unique and non-obvious limitations recited in Claim 1. Thus, Claims 2-5 also are patentable over the *Yi* reference.

Independent Claims 10 and 18 contain limitations that are analogous to the unique and non-obvious limitations recited in independent Claim 1. This being the case, independent Claims 10 and 18 are patentable over the *Yi* reference. Furthermore, dependent Claims 11-13 and 19-21, which depend from Claims 10 and 18, respectively, contain all of the unique and non-obvious limitations recited in their base claims. Thus, dependent Claims 11-13 and 19-21 also are patentable over the *Yi* reference.

In Section 5 of the July 2, 2004, Office Action, the Examiner rejects Claims 6-9, 14-17 and 22-25 under 35 U.S.C. § 103(a) as being unpatentable over *Yi* in view of U.S. Patent No. 6,397,367 to *Park et al.* (hereinafter, simply “*Park*”). The Applicant respectfully traverses this rejection.

The Applicant directs the Examiner’s attention to Claim 6, which contains the unique and non-obvious limitations emphasized below:

6. (Currently Amended) For use in a digital data communications system comprising a channel encoder, an apparatus comprising:

a first Turbo encoder capable of Turbo encoding data, wherein said first Turbo encoder is capable of receiving data from a source encoder of said digital data communications system;

an interleaver unit coupled in parallel with said first Turbo encoder, wherein said interleaver unit is capable of receiving data from said source encoder of said digital data communications system, and wherein said interleaver unit is capable of interleaving said data from said source encoder;

a second Turbo encoder capable of Turbo encoding data, wherein an input of said second Turbo encoder is coupled to an output of said interleaver unit, and wherein said second Turbo encoder is capable of Turbo encoding interleaved data from said interleaver unit; and

a multiplexer having a first input coupled to an output of said first Turbo encoder and having a second input coupled to an output of said second Turbo encoder, said multiplexer capable of multiplexing data from said first Turbo encoder and from said second Turbo encoder. (*emphasis added*)

The Applicants respectfully assert that the above-emphasized limitations are not disclosed, suggested, or even hinted at in the *Yi* reference or in the *Park* reference, or in the combination of the *Yi* reference and the *Park* reference.

The Office Action asserts that the *Yi* reference, in Claim 16, sections A1-A3, discloses a digital communication system comprising a first turbo encoders that encodes digital source information and a second turbo encoder that encodes interleaved digital source information. The Office Action also acknowledges that *Yi* does not teach multiplexing the data from the first and second turbo encoders. The Applicant agrees with these assertions. However, the Office Action then states that the *Park* reference teaches multiplexing data from first and second turbo encoders, and asserts that it would have been obvious at the time of the invention to a person of ordinary skill in the art to include a multiplexer as taught by *Park* in the digital communication system of *Yi*. The Applicant respectfully traverses this final assertion.

After describing the shortcomings of previous digital audio broadcasting methods and systems, the *Yi* reference states:

The present invention transmits uninterleaved and interleaved data elements with corresponding coded data elements to two separate signal paths, and at the turbo decoder, combines these two elements advantageously to achieve an effective overall code rate 1/4 from the simultaneous reception and combination of two code rate 1/2 signals, thereby providing significantly improved performance.
Yi, col. 3, lines 21-29.

That is, by transmitting uninterleaved data elements along one signal path and interleaved data elements along a separate signal path, the digital communication system of *Yi* is able to combine the

two elements at the receiver to provide “significantly improved performance.” Thus, the proposed modification of the *Yi* system by the teaching of the *Park* reference – multiplexing the uninterleaved output of the first turbo encoder with the interleaved output of the second turbo encoder – would defeat the feature of the *Yi* system that provides “significantly improved performance.” As such, the *Yi* reference actually teaches away from the proposed combination.

This being the case, independent Claim 6 presents patentable subject matter over the *Yi* reference and the *Park* reference. Furthermore, independent Claims 14 and 22 recite limitations that are analogous to the unique and novel limitations recited in Claim 6 and, therefore, are patentable over the *Yi* reference and the *Park* reference. Additionally, dependent Claims 7-9, 15-17 and 23-25, which depend from Claims 6, 14 and 22, respectively, contain all of the unique and novel limitations recited in their base claims. Claims 7-9, 15-17 and 23-25 are therefore patentable over the *Yi* reference and the *Park* reference.

SUMMARY

For the reasons given above, the Applicant respectfully requests reconsideration and allowance of pending claims and that this Application be passed to issue. If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at *jmockler@davismunck.com*.

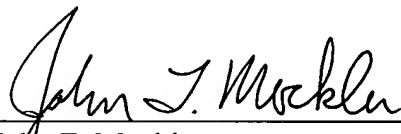
The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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